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# Posttraumatic Stress and Aggression Among Veterans in Long-term Care

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Because stresses associated with long-term care settings may exacerbate distress and aggression related to past trauma, we investigated self-report and staff reports of posttraumatic stress disorder symptoms and staff observations of verbal and physical aggression in 32 elderly males who were patients in a long-term care unit for veterans. Feelings of anger and irritability were reported by 47% of patients; levels of anger and irritability were significantly correlated with observed aggressive behaviors ( $r = 0.43$ ,  $P < .02$ ); and observed aggressive behaviors were significantly more frequent among those reporting past traumatic stressors ( $t = 2.84$ ,  $P < .008$ ). Patient-reported posttraumatic stress

disorder symptoms were significantly correlated with the frequency of past traumatic stressors ( $r = 0.48$ ,  $P < .006$ ). Observer-reported posttraumatic stress disorder symptoms and patient reports of anger were strongly correlated ( $r = 0.73$ ,  $P < .001$ ). No patient or staff reports were related to level of cognitive function. These findings are consistent with the hypothesis that posttraumatic symptoms can contribute to aggressive behaviors in elderly, medically ill, and cognitively impaired patients.

**Keywords:** posttraumatic stress; aggression; elderly; long-term care

**P**sychediatric symptoms related to trauma exposure can affect well-being and functioning at any age and in any setting, but they may be particularly troublesome to those whose age and circumstances reduce their perceptions of control over their lives and their immediate environment.<sup>1</sup> Elderly medically ill patients with past trauma may feel extremely vulnerable in long-term care settings

because they are less able to avoid trauma reminders and maintain an environment that feels safe. Patients with past trauma who have become socially isolated may be especially stressed by moving into a long-term care environment. Patients accustomed to living alone or with a spouse may become anxious because of the pressures of a group living situation such as having to share a room and bathroom, the need for very frequent social interactions, no place to be alone, and a general lack of privacy. In addition, if patients are beginning to experience cognitive impairment, feelings of loss of control and threat to safety may be even greater.

Only a few studies have investigated the prevalence of posttraumatic stress symptoms among long-term care patients. One study of World War II (WW II) veterans in a Canadian VA long-term care facility found that 23% of the cognitively intact veterans studied met diagnostic criteria for posttraumatic stress disorder (PTSD).<sup>2</sup> In a second study of cognitively intact veterans of WW II, Korea, and Vietnam residing in a long-term care facility, 9.4% met full diagnostic criteria for PTSD and 15.6% met partial criteria for PTSD.<sup>3</sup> Because neither study included patients with cognitive

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impairment, these studies do not shed light on the relationship between PTSD and cognitive status, but they do indicate the presence of the diagnosis in a substantial number of long-term care patients. The prevalence of PTSD and partial PTSD may well increase in US long-term care settings in the next 10 to 20 years as a result of increases in life expectancy, demographic trends toward a larger number of elderly persons, and a higher prevalence of PTSD among Vietnam and Korean War veterans compared with WW II veterans.

It also may be difficult to care for patients who have posttraumatic stress disorder in long-term care settings. Anger and aggressive behavior are part of the diagnostic criteria for posttraumatic stress disorder,<sup>4</sup> and these are among the most difficult behaviors to manage in long-term care patients.<sup>5</sup> One study of psychogeriatric long-term care patients in the United Kingdom found that staff ratings of patient aggression correlated strongly with staff ratings of negative perceptions of patients. Aggression in long-term care patients with dementia can be extremely challenging for caregivers and can lead to negative interactions that are very unpleasant for caregivers and patients alike.<sup>6</sup>

In general, aggression is fairly common among elderly persons and is more common in elderly persons with dementia and those in long-term care.<sup>7</sup> Aggression has been studied as a component of agitation in elderly long-term care patients<sup>8-10</sup> but has also been the exclusive focus of some studies. In one study that categorized long-term care patients in terms of types of aggression, about half were perceived by long-term care staff as aggressive, with 29% exhibiting only physical aggression, 21% only verbal aggression, and 32% both physical and verbal aggression.<sup>11</sup> Other studies reported physical aggression in about half of long-term care patients and verbal aggression in 30% to 40% of patients.<sup>12,13</sup> There are a number of apparent risk factors or correlates of aggression in elderly people, including neurological disease, cognitive impairment, male sex, and environmental factors such as crowding or intrusions into interpersonal space and poor interpersonal relationships.<sup>7</sup> These factors are thought to interact and contribute in an additive fashion to aggression.

Because defensive aggression may be exacerbated in trauma survivors who feel threatened and unsafe, there has been concern about whether posttraumatic stress may cause or exacerbate anger and aggression in long-term care patients.<sup>14</sup> When entering a long-term care setting, older trauma survivors may be faced with

trauma reminders and other stressors that could reactivate or exacerbate posttraumatic stress symptoms. For example, residents of long-term care settings may be reminded of traumas involving injury or death by seeing injured or ailing bedridden patients; smelling noxious hospital scents; or hearing ill, demented, or delirious patients moaning, shouting angrily, or crying for help. Also, in long-term care settings, older adults with PTSD symptoms may feel threatened when interacting with care providers who speak loudly, appear to be giving commands, appear to be angry or impatient, use physical pressure to get a patient to comply, or are of unfamiliar ethnicities.

The Department of Veterans Affairs (DVA) is the largest provider of long-term care in the United States and cares for veterans with relatively high rates of exposure to traumatic stressors. In addition to the other trauma reminders and stressors mentioned above, display of military photos, symbols, and memorabilia might remind patients in DVA long-term care facilities of military trauma. Reminiscence activities that are commonly used in long-term care facilities might also remind veterans of past traumatic experiences. Furthermore, elderly veterans may be reminded of wartime experiences by long-term care staff who are immigrants to the United States because they speak another language, speak English with an accent, or resemble former combatants.

For veterans and nonveterans alike, all of the stressors that might occur in a long-term care setting unfold against a backdrop of changes that are common in the lives of older adults, such as retirement, impaired vision and hearing, physical illnesses, inability to drive or get around independently, onset of cognitive impairment, and loss of independence. These changes may also play a role in exacerbating latent posttraumatic stress symptoms.<sup>1</sup> Support for this hypothesis comes from a number of studies of PTSD in elderly veterans. In a New Zealand study of 45 WW II veterans evaluated for deterioration of their psychiatric status, all 45 of the veterans referred for evaluation were retired and had experienced a significant and recent medical illness.<sup>15</sup> A US study of veterans referred for a PTSD evaluation found that 70% of those with PTSD or significant PTSD symptoms had experienced exacerbation of their symptoms following life stresses such as retirement, deteriorating health, or death of a loved one.<sup>16</sup> In addition, examination of symptom course in elderly veterans who had been prisoners of war (POWs) in WW II showed patterns consistent with these studies. Whereas 18% had had

continuous symptoms since the war, another 11% had reactivation of PTSD symptoms after decades of lower symptom levels.<sup>17</sup> Among WW II and Korean War POWs, a cross-sectional analysis of the relationships between late-life factors and current PTSD showed that negative health changes and social support were both related to PTSD symptoms.

Very little research has been conducted that focuses on posttraumatic stress symptoms and aggression in elderly or cognitively impaired patients. One study of veterans who were geropsychiatric inpatients with dementia diagnoses found no differences in aggression between patients with a PTSD diagnosis and age- and mental status-matched control patients with no PTSD diagnosis.<sup>18</sup> Several aspects of the study make it difficult to interpret these findings. Because the study's sample was small ( $N = 32$ ), the power of the analysis to detect a small or medium effect size ( $d = 0.2-0.5$ ) was relatively low (0.09-0.29) and the probability of a false-negative result was high (0.91-0.71). In addition, use of antidepressant medications was more frequent in the dementia/PTSD group (69% vs 31%) and could have reduced aggression in that group. Last, comparing patients meeting criteria for PTSD diagnosis with those not meeting criteria may be misleading in that the no-PTSD group may have had subclinical levels of PTSD symptoms. As the authors noted, assessing the level of PTSD symptoms instead of diagnostic status might have increased the possibility of detecting a relationship if it was present.

Detecting PTSD symptoms and diagnosing PTSD in elderly persons is complicated by clinical presentations that may include vague psychiatric complaints and focus on somatic symptoms.<sup>19</sup> In addition, patients in long-term care may not have had any previous psychiatric diagnoses or treatment if they coped with posttraumatic anxiety by means of avoidance. In general, the course of PTSD has been observed to change over time, with prominent reexperiencing of symptoms near the time of trauma that gradually give way to avoidance and isolation.<sup>20</sup> In persons whose trauma exposure was 30, 40, or even 50 years in the past, avoidance symptoms may well have dominated the clinical picture for decades and allowed adequate social and occupational functioning.

A major impediment to research on PTSD symptoms in elderly people is the lack of a validated brief measure of severity or frequency of PTSD symptoms that can be used with elderly persons who have cognitive impairment. Many elderly

people may be unable to understand and answer the relatively complex questions on standard self-report measures of PTSD because of declines in cognitive functioning attributable to stress, medical illness, or the onset of dementia. Although not all people experience a major decline in cognitive function as they age, a meta-analysis of studies of cognitive decline in elderly people found that cognitive decline is almost universal, increases with age, and can be expected in the majority of those in their 80s.<sup>21</sup> In addition, a number of medical illnesses increase the risk of temporary or persistent cognitive decline in elderly persons.<sup>22</sup>

To date, no studies have used standard self-report measures of PTSD to assess elderly persons with cognitive impairments. All of the studies using self-report measures of PTSD in samples of elderly patients either excluded patients with cognitive impairments or organic brain syndrome diagnoses or sampled participants in a way that effectively selected for cognitively intact participants. Of the 8 studies we found that investigated the performance of self-report PTSD measures in elderly persons, 4 specifically excluded people with dementia<sup>3,23-25</sup> and 4 selected their samples in ways that effectively excluded ill or cognitively impaired people.<sup>26-29</sup> Of the latter, 2 sampled community-dwelling, elderly men who presented at clinics to participate in health screening programs for former POWs,<sup>28,29</sup> 1 sampled WW II veterans participating in studies that required travel to the VA for extensive evaluations over 2 sessions,<sup>27</sup> and 1 was conducted as a mail survey.<sup>26</sup> Because these sampling methods require a high level of initiative and functioning on the part of participants, it seems unlikely that cognitively impaired people would participate.

Given that cognitive impairment is very common among elderly persons in long-term care settings, an alternative to standard self-report assessments of posttraumatic stress symptoms seems needed for this population. Therefore, a simple, interviewer-administered measure was developed to assess persons with mild to moderate cognitive impairment. A brief observer-report measure of posttraumatic symptoms was also created as a first step toward developing a measure for assessing observable posttraumatic symptoms in persons with severely deteriorated cognitive functioning. Using these measures, we collected reports on frequency of patients' PTSD symptoms from both patients and staff and correlated these with patient reports of past traumatic stressor exposure and staff observations of patient

aggression and PTSD symptoms. In addition, we correlated current cognitive function with patient reports of trauma exposure, PTSD symptoms, and aggression to investigate whether cognitive impairment might be influencing these reports.

## Method

### Participants and Procedures

Participants in the study were veterans staying in a long-term care unit of a VA medical center. Patients older than 60 with recent Mini-Mental State Exam (MMSE)<sup>30</sup> scores of 20 or higher who were well enough to be interviewed were included in the study. Informed consent was obtained, and all patient report measures were administered in a private interview with an advanced doctoral student in clinical psychology or a recent clinical psychology postdoctoral trainee. All ratings of patient behavior were made collectively in regular staff meetings and represented observations of the staff who provided care for the patient over the past week. Staff members were informed about the general topic of the research but were blind to the patients' trauma history and ratings on the interview measures.

### Measures

The MMSE was used to assess the cognitive functioning of participants.<sup>30</sup> Chart diagnosis of PTSD was obtained from available VA medical records, which were complete only for recent years for most participants. Because patients may not have had a recent, detailed psychiatric evaluation, psychiatric diagnoses from the past 5 years were included. Eleven items from the Cohen-Mansfield Agitation Inventory (CMAI) were used to assess verbal and physical aggression.<sup>10</sup> The validity of the CMAI to assess aggressive behaviors in elderly long-term care residents has been supported by several studies.<sup>31-33</sup> Items assessed were those found to load onto an aggressive behavior factor in a study of long-term care patients<sup>8,10</sup>: hitting, kicking, grabbing people, pushing, throwing things, biting, scratching, spitting, hurting self or others, tearing things or destroying property, and cursing or verbal aggression. Consensus ratings for these items were obtained in a staff meeting from those staff members who had cared for the patient in the past week. Items were rated on a 7-point response scale ranging from 0

(never) to 6 (a few times an hour). A total score for aggression was calculated by adding ratings for all 11 items; therefore, total CMAI-aggression scores could range from 0 to 66.

History of exposure to traumatic stressors was assessed by means of an oral administration of the Trauma History Screen ([THS]E. B. Carlson et al, unpublished data, 2005). The THS inquires about exposure to 12 types of sudden, high-magnitude stressors. Details are obtained about stressors that "really bothered" a person that allow determination of criterion A. Traumatic stressors associated with persisting posttraumatic distress (PPD) were defined as those involving a traumatic stressor that met *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition (DSM-IV) criterion A1 (event involved actual or threatened death or injury) or criterion A2 (subjective response to event involved fear, helplessness, or horror) or was associated with significant and lasting distress (person reports being bothered "somewhat," "much," or "very much" for 2-3 weeks or more than 1 month). The threshold to define PPD events was set fairly low for this sample because many of the traumatic events had occurred many years before, and memory for intensity and duration of symptoms was expected to be less precise.

Posttraumatic stress symptoms were assessed using the Posttraumatic Stress Screen for the Cognitively Impaired (PTSS-CI). The PTSS-CI was designed to screen for PTSD symptoms in elderly patients or those with cognitive impairment, and it is available in both self-report and observer versions (PTSS-CI-OV). Both versions include 8 items that are relatively easy to describe in simple language and represent those DSM-IV reexperiencing, avoidance, and hyperarousal symptom criteria that could be described in very simple language. The 8 PTSS-CI items assess the PTSD criteria of reexperiencing (B1, "having memories of terrible things that happened in the past"; B2, "having nightmares"), avoidance (C1, "trying to avoid reminders of terrible things that happened in the past"), and hyperarousal (D1, "restless sleep"; D2, "feeling angry or irritable"; D4, "feeling jumpy or nervous" and "feeling as if you were in danger"; D5, "getting upset by sudden noises" and "being surprised by someone coming up behind you"). More items were included that assessed hyperarousal symptoms because these were easier to describe in very simple terms and because we expected patients to be more aware of and more willing to report these symptoms than others. Because observer version

65 items described symptoms in terms of behaviors that could be observed by others, some items in the PTSSCI-OV were different from those in the PTSS-CI. Criterion B1 (distressing memories) was assessed with "talking or thinking about terrible things that happened in the past" and "distracted, preoccupied, or off in his/her own world," and criterion C (avoidance of reminders) was not assessed. The patient version is administered orally, and ratings are assigned to items by the interviewer based on patient responses to items. The observer version is completed by a caregiver (family member or health care worker) who rates each item based on observations during 1 week. The instructions and wording of items for the observer version are at a relatively low reading level because observers may have relatively low levels of education or read English as a second language. Item ratings on both versions are anchored with specific behavioral descriptions of frequency and severity in terms of the item's impact on functioning and include 0 (not at all), 1 (mild: happened, but was not very upsetting or troublesome), 2 (moderate: clearly noticeable, patient bothered or upset by this problem; patient had to stop what he or she was doing, but only for a few minutes), 3 (severe: patient very upset by this problem; patient had to stop what he or she was doing and took more than 10 minutes to calm down; upset enough for others to notice). Total scores on the PTSS-CI and the PTSS-CI-OV can range from 0 to 24. For the patient version, prompts of "Did that happen last week?" "Did it upset you?" and "Did it bother you?" are suggested if the patient's answer to an item is unclear. Results A total of 32 male patients were included in the study. Patients were residents in a VA long-term care facility with a wide range of medical and psychiatric conditions. They were between 64 and 89 years of age (mean age = 77.7, SD = 6.35), with 84% self-identifying as Caucasian and 16% self-identifying as African American. Participants' MMSE scores ranged from 20 to 30 with a mean of 25.3 (SD = 3.10). Two participants had a current diagnosis of posttraumatic stress disorder, and both of these had been prisoners of war (1 in Germany during WW II and 1 in Korea during the Korean War). Four patients (12.5%) had diagnoses of dementia or cognitive disorder, not otherwise specified (NOS). Thirteen (40.6%) of participants had 1 or more psychiatric diagnoses recorded in their chart within the past 5 years, although it is unlikely that medical records were complete for all patients and many had not had recent psychiatric evaluations. None were receiving any interventions specifically aimed at reducing aggression. Information about medications was not collected, but many patients were taking medications that could have psychoactive effects. Thirty-one participants (96.9%) reported past exposure to 1 or more high-magnitude stressors, with a mean frequency of 8.8 high-magnitude stressors (SD = 10.73). Sixty percent reported exposure to a motor vehicle or other severe accident, 55% reported exposure to a natural disaster, 47% reported exposure to the sudden death of a close friend or family member, 41% reported exposure to interpersonal violence as a child or adult, 56% reported exposure to a military trauma, 50% reported seeing someone get badly hurt or killed, and 12% reported exposure to some other event that scared them badly. Fifty percent of participants (16) reported no events that met DSM-IV criterion A and were associated with posttraumatic distress that persisted for 2 weeks or more (PPD events), 37.5% (12) reported 1 PPD event, 9.4% (3) reported 2 PPD events, and 3% (1) reported 3 PPD events. Most of these events had happened in the remote past, with 20% of participants reporting having had persistent distress in response to events that occurred within the past 13 years and 80% reporting persisting distress in response to events that occurred more than 40 years in the past. Among all participants, 21.9% reported 1 or more military traumas associated with PPD, 9.4% reported 1 or more accidents associated with PPD, 18.8% reported 1 or more sudden deaths of loved ones associated with PPD, 9.4% reported 1 or more witnessing a severe injury or death associated with PPD, 6.25% reported 1 or more interpersonal violence events associated with PPD, 3.1% of participants reported a natural disaster associated with PPD, and 9.4% reported 1 or more other traumas associated with PPD. The posttraumatic stress symptom most frequently reported by veterans was feeling irritable or angry (47%), with 22% of participants reporting a moderate and 9% reporting a severe level of this symptom. The next most frequently endorsed items was having nightmares or restless sleep (28%), followed by being startled by someone coming up from behind (25%) and feeling jumpy or nervous (22%). Other posttraumatic stress symptoms were reported by 11% or less. The posttraumatic stress symptom most

frequently observed by staff was irritability, anger, or aggression (28%), with a moderate level of this observed in 19% and a severe level observed in 9%. The next most frequent symptom observed was appearing jumpy or nervous (19%), having nightmares or restless sleep (16%), and appearing distracted or preoccupied (16%). All other posttraumatic stress symptoms were observed in 12.5% or less. CMAI-aggression scores ranged from 0 to 5 with a mean score of 0.53 (SD = 1.32). Aggressive behaviors were observed in 6 of 32 (18.7%) of veterans, and these were limited to cursing or verbal aggression (15.6%) and tearing things or destroying property (3.1%).

Scores on the PTSS-CI ranged from 0 to 12, with a mean score of 3.34 (SD = 3.52) and a median score of 2. For this study, a criterion for elevation on the PTSS-CI could be defined as a score of 7 or higher. That score would be 1 SD above the mean PTSS-CI score for the sample and would reflect ratings such as 1 (mild) on most of 8 items or 2 (moderate) on 4 of 8 items. Applying this criterion to this sample, 7 veterans (21.9%) had elevated PTSS-CI scores. Of these 7 veterans, 2 had chart diagnoses of PTSD, 2 had chart diagnoses of other anxiety state NOS within the past 5 years, 1 each had a diagnosis of depressive disorder and atypical psychosis (and reported a past diagnosis of combat fatigue), and 2 had no psychiatric diagnoses. Of the 25 patients with PTSS-CI scores below 7, none had a chart diagnosis of PTSD, and 1 had a chart diagnosis of an anxiety disorder in the past 5 years. Those with elevated PTSS-CI scores were significantly more likely to have a chart diagnosis of an anxiety disorder within the past 5 years without elevated scores on the PTSS-CI ( $\chi^2_1 = 11.72$ ,  $P < .001$ ). Sensitivity and specificity of the PTSS-CI (and PTSS-CI-OV) was not calculated because of the small sample size, the very small number of cases positive for PTSD, and the lack of definitive diagnoses.

Scores on the PTSS-CI-OV ranged from 0 to 12 with a mean score of 2.25 (SD = 3.14) and a median score of 1. A criterion for elevation on the PTSS-CI-OV might be defined as a score of 6 or higher, which would be 1 SD above the mean PTSS-CI-OV score for the sample and would reflect ratings such as 1 (mild) or higher on most items or 2 (moderate) or higher on 3 or more items. When we applied this criterion to this sample, 5 veterans (15.6%) had elevated PTSS-CI-OV scores. Of these 5 veterans, 3 had no psychiatric diagnoses, 1 was diagnosed with schizoaffective disorder, and 1 was diagnosed with adjustment disorder and

recurrent depressive disorder. Those with elevated PTSS-CI-OV scores were not more likely to have a chart diagnosis of an anxiety disorder within the past 5 years than those with no elevation on the PTSS-CI ( $\chi^2_1 = 1.10$ ,  $P$  not significant). One veteran had elevated scores on both the PTSS-CI and the PTSS-CI-OV. Sensitivity and specificity of the PTSS-CI-OV was not calculated because of the small sample size, the very small number of cases positive for PTSD, and the lack of definitive diagnoses."

The frequency of past traumatic events (PPD events) reported correlated significantly with PTSS-CI scores ( $r = 0.48$ ,  $P < .006$ ) and scores on the PTSS-CI anger and irritability item ( $r = 0.38$ ,  $P < .03$ ). PTSS-CI and PTSS-CI-OV scores were not significantly correlated ( $r = 0.18$ ,  $P$  not significant). CMAI-aggression scores were significantly correlated with PTSS-CI-OV scores ( $r = 0.73$ ,  $P < .001$ ) and with scores on the anger and irritability item on the PTSS-CI ( $r = 0.43$ ,  $P < .02$ ) but not with total PTSS-CI scores ( $r = 0.15$ ,  $P$  not significant). Also, CMAI-aggression scores were significantly higher for the 16 veterans reporting 1 or more PPD events (high-magnitude stressors associated with persistent distress) than for the 16 veterans reporting no such stressors ( $t = 2.84$ ,  $P < .008$ ). MMSE scores were unrelated to the number of PPD events reported ( $r = 0.08$ ,  $P$  not significant), PTSS-CI scores ( $r = 0.04$ ,  $P$  not significant), PTSS-CI-OV scores ( $r = -0.19$ ,  $P$  not significant), and CMAI-aggression scores ( $r = -0.03$ ,  $P$  not significant).

Additional analyses were conducted to investigate whether lower, nonsignificant correlations between PTSS-CI scores and ratings on the PTSS-CI-OV and CMAI-aggression measures might be the result of the tendency for individuals to be better reporters of internally experienced symptoms than of externally expressed ones and for observers to be better reporters of expressed external symptoms than of those experienced internally by others. If this were the case, in this study, a stronger correlation would be expected between self-report and observer reports of external symptoms than between self-report and observer reports of internal symptoms. Subscores for internally experienced symptoms (nightmares or restless sleep; feeling in danger/unsafe; avoiding reminders [PTSS-CI only]; memories/talking of past/preoccupied) and external symptoms (jumpy or nervous; upset by sudden noises; upset by approach from behind; and irritated, angry, or aggressive) were calculated for both versions of the PTSS-CI. PTSS-CI and PTSS-CI-OV reports of external symptoms

were significantly correlated ( $r = 0.38$ ,  $P < .03$ ), whereas PTSS-CI and PTSS-CI-OV reports of internal symptoms were not ( $r = -0.004$ ,  $P$  not significant). PTSS-CI-OV reports of external symptoms were significantly and strongly correlated with CMAI-aggression scores ( $r = 0.84$ ,  $P < .001$ ).

Analyses were also conducted to further investigate whether the finding that significantly more aggressive behaviors were observed in the 16 veterans who reported past exposure to events that caused them persistent distress than in the 16 who reported no such events may be the result of those who feel more aggressive being more likely to perceive and report their earlier lives as having involved more trauma. If this influence were the primary cause of the observed relationship, we would expect the total score on PTSS-CI to account for no or little additional variance in the number of PPD events beyond that accounted for by the score on the PTSS-CI anger and irritability item. A regression analysis to examine this question showed that anger and irritability item scores explained 5.4% of the variance in the number of PPD events reported ( $F_{2,29} = 1.75$ ,  $P$  not significant) and that PTSS-CI scores explained an additional 20% variance in the number of PPD events reported ( $F_{2,29} = 4.9$ ,  $P < .015$ ).

## Discussion

Overall, almost all of the elderly male veterans in this study reported exposure to 1 or more high-magnitude stressors, with 50% reporting significant, lasting distress following 1 or more of the events. This rate of exposure to high-magnitude stressors is higher than the rate of 60.7% reported for men in the National Comorbidity Study (NCS),<sup>34</sup> but that is not surprising given that a far greater proportion of these participants reported exposure to a military trauma (56% vs 6.4%). The participants in this sample were also, as a group on average, about 45 years older than those in the NCS, so they had a much longer period in which to experience exposure. Participants in the study experienced a wide variety of events that were associated with persisting posttraumatic distress, and the frequency of such events was significantly associated with current levels of self-reported PTSD symptoms. This seems to indicate that long-past events may be clinically relevant for these elderly, medically ill veterans.

Self-report and observer reports of PTSD symptoms in these veterans were not significantly associated

and there was little correspondence between elevations on the PTSS-CI and the PTSS-CI-OV, although PTSS-CI and PTSS-CI-OV reports of external symptoms were significantly related. Analyses of self-report and observer reports of internal and external PTSD symptoms appeared to support the hypothesis that the lack of association between self-report and observer reports of PTSD symptoms can be explained by the tendency for individuals to be better observers of internally manifested behaviors and observers to be better reporters of externally expressed behaviors.

None of the observed relationships appear to be explained by the influence of current cognitive function, because MMSE scores were unrelated to any of the variables of interest. These findings are consistent with a large study of Dutch psychogeriatric patients referred for long-term care. The levels of psychiatric symptoms such as depression, anxiety, and agitation/aggression in these patients were not significantly related to cognitive function.<sup>35</sup> In a second study of US long-term care residents, MMSE was found to have a significant negative relationship to an observer rating ( $-0.27$ ) and to direct behavioral observations of agitation ( $-0.29$ ), which included aggressive behaviors.<sup>36</sup> Relationships between MMSE and aggressive behaviors (observer rating or direct behavioral observations) were not reported in this study, so it is unclear whether the finding applies to aggressive behaviors or whether nonaggressive agitation accounted for most or all of the relationship. The different findings in the 2 studies may be explained by the difference in the variables measured (aggression alone or aggression as a part of agitation) or may reflect differences in the samples studied. One study sampled psychiatric patients only and the other sampled long-term care patients who had a low level of cognitive function on average (mean MMSE = 7.7). With an average MMSE of 25.3, the patients in the current study had a much higher level of cognitive function on average. It may be that aggression is related to cognitive function in those with full-blown dementia but not in those with more mild cognitive deficits.

Collectively, the findings indicate that anger and irritability are significant problems for a considerable proportion of these elderly patients both from their own and the staff's perspectives. More than one third of the patients reported feeling angry or irritable, and almost one third of the patients were observed by staff to appear irritable, angry, or aggressive. In addition, there was some indication that past



traumatic experiences and current PTSD symptoms contribute to aggressive behaviors in the long-term care environment. Patient past traumatic events, current internal experience of anger and irritability, and observed PTSD symptoms were all associated with observed aggressive behaviors. Although it is possible that the higher level of aggression observed among those who reported past events involving persisting distress may be the result of those who feel more aggressive being more likely to perceive and report their earlier lives as having involved more trauma, regression analyses to investigate the proportion of variance accounted for by PTSS-CI scores beyond that explained by anger and irritability did not support that model. In addition, detailed studies of the accuracy of retrospective trauma exposure reports have generally found more evidence of reporting errors in the direction of underreporting than of overreporting.<sup>37,38</sup>

Several aspects of the findings appear to provide preliminary support for the validity of the PTSS-CI as a measure of posttraumatic symptoms. The finding of a significant relationship between the THS and PTSS-CI scores supports the construct validity of the measure. The criterion-related validity of the PTSS-CI was supported by the finding of a higher proportion of patients with anxiety disorder diagnoses among those with elevated PTSS-CI scores. PTSS-CI scores corresponded to diagnosis better than PTSS-CI-OV, but that is not surprising for an anxiety disorder diagnosis that is largely an internal experience. Preliminary evidence of support for the validity of the PTSS-CI-OV scores included a strong relationship between PTSS-CI-OV scores and ratings of aggressive behavior.

Several limitations of the current study are important. First, the measurement of observed aggression may not have captured the entire range of relevant aggressive behaviors because it assessed only more extreme forms of aggressive behavior. The aggressive behaviors observed in this sample had limited predictive capacity, in part because they occurred at relatively low frequencies. Long-term care staff consulted in regard to study findings of low levels of observed aggression noted that many more subtle aggressive behaviors frequently occur that also make it difficult to provide care for patients. Such behaviors include belligerence, banging objects or slamming doors, angry looks, hostile refusal to cooperate, angry or hostile (but not overtly aggressive) speech, and use of an angry tone of voice. Future research on this topic may

benefit from more sensitive measurement of aggressive, hostile, and threatening behaviors.

Another concern is that the items developed for the PTSS-CI and PTSS-CI-OV do not represent the full range of symptoms for PTSD. In particular, there are relatively few items assessing criterion B (reexperiencing) and criterion C (avoidance). The items developed for this initial study were limited to the symptom criteria that were considered the most feasible to describe in very simple language and most likely to be reported. Although the latter assumption was supported by most frequent endorsement of hyperarousal items, it is possible that items assessing other symptoms may have been endorsed had they been included. More investigation is needed to further examine the psychometric properties of the items already developed and to develop new items to better assess avoidance and reexperiencing symptoms.

A related issue is that some PTSD symptoms described in PTSS-CI items, such as restless sleep, being irritable, and feeling nervous, are not specific to PTSD. These symptoms could be related to other conditions such as other anxiety disorders, affective disorders, or dementia. The sample in this study was not large enough to conduct analyses that controlled for the presence of other disorders. Even if such an analysis were possible, it might not be possible to determine that particular symptoms were attributable to one or another of multiple comorbid psychiatric disorders. Consequently, as is always the case with screening measures, the possibility of false-positive screens attributable to symptom overlap across disorders makes it imperative that any positive screen be followed up with a detailed diagnostic interview whenever feasible.

In addition, although the relationship between staff-rated symptoms and aggressive behaviors shows promise to help predict whether patients are likely to be aggressive in a long-term care setting, a stronger relationship may have been observed between the 2 than if symptom ratings had been made earlier. Similarly, ratings of symptoms and aggressive behaviors by the same reporters (staff) may relate more strongly than ratings of symptoms by different reporters (caregivers in 1 time frame and staff in another). On the other hand, caregivers such as family members or private care nurses may be more acute observers of patient symptoms than long-term care staff, who see patients for a much smaller proportion of their waking hours. Additional research showing that caregiver symptom ratings on



the PTSS-CI-OV correlate well with patient ratings is needed to support the validity of the PTSS-CI-OV as a measure of traumatic stress symptoms. Furthermore, additional research will be needed to convincingly demonstrate that PTSS-CI-OV ratings completed by a caregiver before admission can improve prediction of aggressive behaviors beyond standard intake assessments or whether information about trauma and PTSD symptoms can be used to positively influence the dynamic between patients and long-term care staff members.

Last, the levels of aggression in the patients studied may have been affected by psychoactive medications that can reduce aggression. Although this is quite possible, the sample studied was too small to statistically control the effects of psychoactive medications and still achieve adequate power in analyses. In addition, patients in most long-term care settings are also likely to be taking psychoactive medications that might affect aggression. For this reason, we believe it is still useful to study these relationships as they occur in typical environments. To answer questions about whether different relationships between variables might be found if patients on medications were compared with those who were not on medications, a much larger sample would be needed.

Taken together, the findings indicate that PTSS-CI results may be useful in assessing the degree of posttraumatic distress in elderly persons in long-term care and that PTSS-CI-OV results (particularly the external items) may be useful in predicting levels of aggressive behaviors. The PTSS-CI may also be useful for assessment of other clinical populations for whom a standard brief PTSD measure is not suitable, such as patients with cognitive impairment attributable to medical conditions or persons with pervasive developmental disorders or mental retardation. Similarly, an observational measure such as the PTSS-CI-OV could be helpful for use with patients with severely impaired cognitive function attributable to traumatic brain injury who cannot provide clear self-reports of symptoms. Further evidence is needed to establish the reliability and validity of the PTSS-CI and PTSS-CI-OV, such as predictive validity, correspondence of scores to results of a detailed diagnostic interview, and test-retest reliability. Although it is not clear whether posttraumatic distress plays any direct or indirect causal role in aggressive behaviors in elderly long-term care patients, results of this study were consistent with such models, and they seem to merit further investigation.

## Appendix: Posttraumatic Stress screen for the Cognitively Impaired (PTSS-CI)

**Interviewer instructions:** Read the instructions below to the patient. Make sure that the patient understands that the questions are about what happened in the past week. For each symptom, fill in the number that best reflects the patient's response. Moderate and severe ratings should be given for symptoms that happened many times or for a symptom that happens only once or twice but is very upsetting.

Use the ratings below, but do not read these definitions to the patient.

0 = Not at all

1 = Mild: happened, but was not very upsetting or troublesome

2 = Moderate: clearly noticeable, patient bothered or upset by this problem; patient had to stop what he or she was doing, but only for a few minutes

3 = Severe: patient was very upset by this problem; patient had to stop what he or she was doing and took more than 10 minutes to calm down; upset enough for others to notice

If the patient seems unsure of how to respond, use prompts such as: "Did that happen last week?" "Did it upset you?" "Did it bother you?"

**Patient Instructions:** I am going to ask you about some problems that might be bothering you. After each question, tell me how much that problem bothered or upset you in the last week.

- \_\_\_ Have you been feeling jumpy or nervous?
- \_\_\_ Have you been getting upset by sudden noises?
- \_\_\_ Have you been surprised by someone coming up behind you?
- \_\_\_ Have you had nightmares or restless sleep?
- \_\_\_ Have you had memories of terrible things that happened in the past?
- \_\_\_ Have you been feeling as if you were in danger?
- \_\_\_ Have you been feeling irritated or angry?
- \_\_\_ Have you been trying to avoid reminders of terrible things that happened in the past?

(continued)

## Appendix: (continued)

### PTSS-CI—Observer Version

**Instructions:** This measure can be completed by a health care provider, family member, or friend who has observed the patient's behavior for at least 1 week. For each symptom, fill in the number that best reflects the patient's behavior. Moderate and severe ratings should be given for symptoms that happened many times or for a symptom that happens only once or twice but is very upsetting.

0 = Not at all

1 = Mild: happened, but was not very upsetting or troublesome

2 = Moderate: clearly noticeable, patient bothered or upset by this problem; patient had to stop what he or she was doing, but only for a few minutes

3 = Severe: patient very upset by this problem; patient had to stop what he or she was doing and took more than 10 minutes to calm down; upset enough for others to notice

\_\_\_ Jumpy or nervous

\_\_\_ Upset by sudden noises

\_\_\_ Upset by someone coming up from behind

\_\_\_ Nightmares, agitated sleep, or trouble sleeping

\_\_\_ Talking or thinking about terrible things that happened in the past

\_\_\_ Watchful or worried about being safe

\_\_\_ Irritated, angry, or aggressive

\_\_\_ Distracted, preoccupied, or off in his or her "own world"

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